

# A new Oriental species of Troctopsocidae (Insecta: Psocoptera)

by

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With 17 figures

## ABSTRACT

**A new Oriental species of Troctopsocidae (Insecta: Psocoptera).** — *Troctopsoculus orientalis* n. sp., from Java (Indonesia) and Borneo (Malaysia: Sarawak), is described and illustrated. It is the first extra-neotropical species of the genus and the third species of Troctopsocidae known from the Oriental Region.

## INTRODUCTION

Troctopsocidae are very rare insects belonging to the electrentomoid psocids sensu MOCKFORD, 1967 (Troctomorpha: Amphientometae). They are best represented (4 genera, 11 species) in Central and South America (ROESLER, 1940; MOCKFORD, 1967; NEW, 1973; TURNER, 1975; GARCIA ALDRETE, 1982). Only four extra-neotropical species are known: the two members of the western palaeartic genus *Chelyopsocus* Lienhard, 1980 (*Ch. garganicus* Lienhard, 1980 and *Ch. hauseri* Lienhard, 1988, known from Italy and Greece respectively) and the two species of the oriental genus *Coleotroctellus* Lienhard, 1988, both known only from Thailand (*C. burckhardti* Lienhard, 1988 and *C. loebli* Lienhard, 1988). In this paper a third oriental species will be described, belonging to the genus *Troctopsoculus* Mockford, 1967, containing only two neotropical species (*T. morenus* Mockford, 1967 and *T. brasiliensis* New, 1973).

The following abbreviations are used in the descriptions: B = body length (in alcohol); A = antenna length; FW = forewing length; F = length of hind femur; T = length of hind tibia; t1-t3 = length of hind tarsomeres (from condyle to condyle); IO/D = shortest distance between compound eyes divided by antero-posterior diameter of compound eye, in dorsal view.

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The material examined was collected during the 1987 expedition of the Geneva Museum to Indonesia and Sarawak; it is deposited in the "Muséum d'Histoire naturelle", Geneva, Switzerland (MHNG).

## DESCRIPTION

### *Troctopsocus orientalis* n. sp.

*Female*. — *Coloration*. Head and thorax dark brown, vertex and frons with some lighter areas. Compound eyes blackish brown. Maxillary palpus, antenna and legs dark brown, tarsi somewhat lighter. Forewing with characteristic colour pattern (Fig. 1). Abdomen with reddish-brown hypodermal pigment, terminalia brown.

*Sculpture*. Head with distinct scabriculous sculpture. Vertical suture distinct, frontal suture not visible, not even as an interruption of sculpture. Membrane of forewing and hindwing covered with small spinules, mostly star-shaped in transverse optical section. Clunium with small spinules or tubercles arranged in more or less well defined transverse spindle-shaped areas.

*Morphology*. Antennae with 11 segments (both antennae of holotype complete), first flagellomere more than twice length of second one. Frons longer than postclypeus in anterior view. All three ocelli well developed, in normal position (close together). Lacinial tip (Fig. 10) with median cusp short, bidenticulate, and lateral cusp very long, with a weakly developed preapical denticle. Maxillary palpus as in figure 11. Wings of normal shape and venation (Figs 1, 2). In forewing *Rs* and *M* connected by a short crossvein, in hindwing first segment of *Rs* absent, only a very short distal rudiment visible (these characters symmetrically developed in right and left wings). No row of spine-like tubercles on anterior carina of first femur. Apical half of tibiae and first tarsal segments on inner side with some stout setae. Pretarsal claw (Fig. 5) with two small preapical denticles (one of them originating on the edge, the other one on inner side near edge), a lateral pecten of hyaline processes and a series of basal processes (the most distal of these especially well developed).

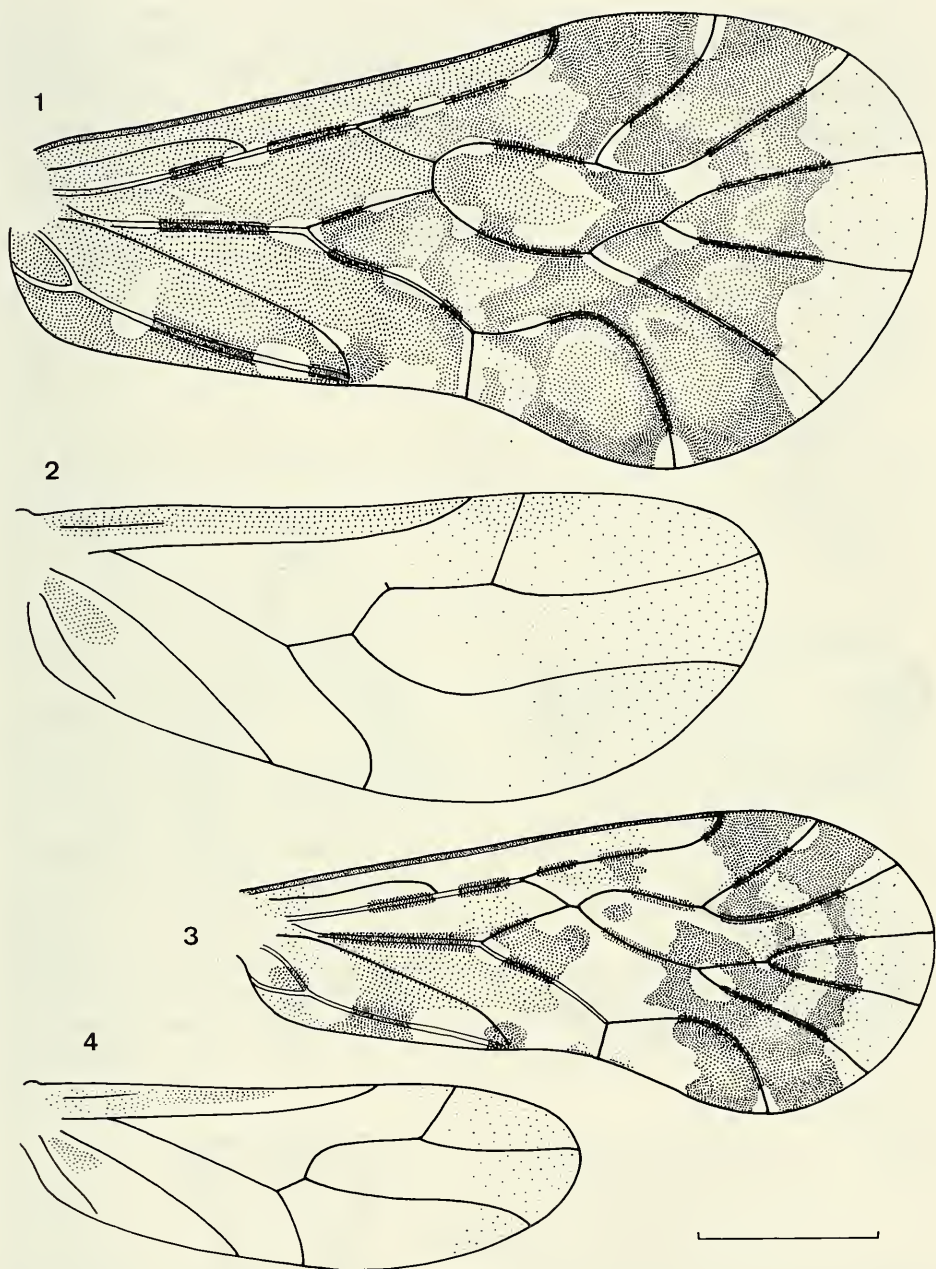
*Terminalia*. Epiproct and paraproct as in figure 7, no knobbed setae on posterior margin of paraproct, sense-cushion of paraproct well differentiated, but setae without basal rosettes. Subgenital plate (Fig. 6) with 2+2 stout marginal setae, T-shaped sclerite with long slender lateral arms. Ovipositor valvulae as in figure 9. Spermatheca (Fig. 8): annular sclerite around spermathecal opening with antero-dorsally directed projection on posterior margin; spermathecal duct relatively short; spermathecal vesicle thin-walled, smooth, somewhat sclerified around origin of duct. Tubular part of spermatophore very long, densely glomerate (two spermatophores present in spermatheca of holotype).

*Dimensions*. B (retracted) = 1.8 mm; A = 1.26 mm; FW = 2.6 mm; F = 519  $\mu$ m; T = 902  $\mu$ m; t1 = 348  $\mu$ m; t2 = 65  $\mu$ m; t3 = 97  $\mu$ m; IO/D = 1.82.

*Male*. — *Coloration*. As described for female, but colour pattern of forewing somewhat different (Fig. 3).

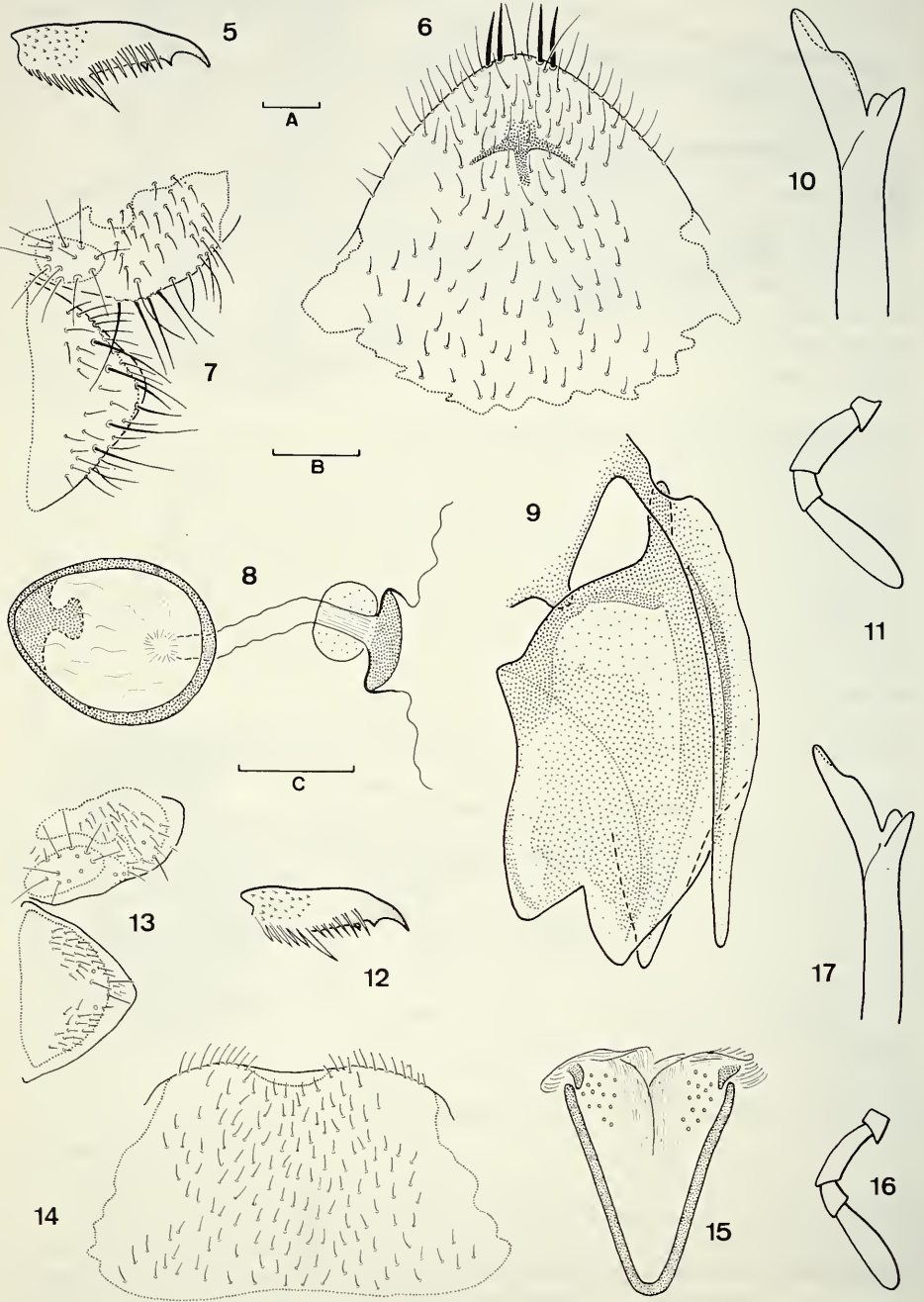
*Sculpture*. As described for female.

*Morphology*. In general as described for female. Both antennae incomplete. Lacinial tip as in figure 17; maxillary palpus as in figure 16; pretarsal claw as in figure 12. Wing venation as in figures 3 and 4; in forewing *Rs* and *M* partially fused (symmetrically in right and left wing), in hindwing no rudiment of first segment of *Rs* visible.



FIGS 1-4.

*Troctopsocus orientalis* n. sp.: 1, forewing ♀. 2, hindwing ♀. 3, forewing ♂. 4, hindwing ♂. —  
Scale bar = 0.5 mm.





Terminalia. Epiproct and paraproct as in figure 13, no knobbed setae on posterior margin of paraproct, sense-cushion of paraproct well differentiated, but setae without basal rosettes. Hypandrium (Fig. 14) with median hyaline bare area on posterior margin. Phallosome (Fig. 15) simple, with some pores on membranous parts of apical half and two small sclerites at the end of the arms of the V-shaped apodeme.

*Dimensions.* B (expanded)=1.7 mm; FW=2.0 mm; F=486  $\mu$ m; T=733  $\mu$ m; t1=293  $\mu$ m; t2=56  $\mu$ m; t3=82  $\mu$ m; IO/D=1.79.

*Material.* — HOLOTYPE ♀, INDONESIA: Java: Cibodas, forest above Botanical Garden, 1400-1500 m, 25.XI.1987 (C. Lienhard). ALLOTYPE ♂, MALAYSIA: Sarawak: Bau, near Fairy Caves, 10-20 m, 3.XII.1987 (C. Lienhard). (MHNG).

#### DISCUSSION

In spite of the differences observed in colour pattern and venation (*Rs-M* connection) of the forewing the unique male and female are considered as belonging to the same species. Both specimens agree very well in all comparable morphological characters (e.g. pretarsal claw, lacinial tip, maxillary palpus, sculpture). The *Rs-M* connection in the forewing often exhibits considerable intraspecific variability in Psocoptera, therefore this character is usually of very low taxonomic value. The presence of only one individual of each sex, originating from geographically very distant localities, prevents any conclusion concerning the type of variation in wing pattern (geographical or sexual variation).

The phylogeny of Troctopsocidae has recently been discussed by LIENHARD (1988). Within the family the genera *Troctopsoculus* and *Coleotroctellus* form a monophyletic group characterized by the apomorphic reduction of the first segment of *Rs* in the hindwing. The absence of stout marginal setae on the subgenital plate has been considered as an autapomorphy of *Troctopsoculus*. The new material shows now that this apomorphy is restricted to the two neotropical species of the genus, while in *T. orientalis* 2+2 stout setae are present on the hindmargin of the subgenital plate. Therefore this character has to be omitted from the key separating *Troctopsoculus* and *Coleotroctellus* given by LIENHARD (1988: 579), whereas the two other autapomorphies of *Troctopsoculus* used in this key are also present in *T. orientalis* (antenna of 11 segments, pretarsal claw with lateral pecten). *T. orientalis* is easily distinguishable from *T. morenus* and *T. brasiliensis* by the presence of these stout marginal setae on the subgenital plate and the continuous hyaline apical area in the forewing, reaching from *R4+5* to *M3* (cf. Figs in MOCKFORD, 1967 and NEW, 1973); males are unknown in both neotropical species.

#### FIGS 5-17.

*Troctopsoculus orientalis* n. sp.: 5, pretarsal claw ♀. 6, subgenital plate ♀. 7, epiproct and right paraproct ♀. 8, spermathecal duct and sclerite of spermathecal opening ♀. 9, ovipositor valvulae ♀. 10, lacinial tip ♀. 11, maxillary palpus ♀. 12, pretarsal claw ♂. 13, epiproct and right paraproct ♂. 14, hypandrium ♂. 15, phallosome ♂. 16, maxillary palpus ♂. 17, lacinial tip ♂. — Scale bars: A=0.01 mm (Figs 5, 12); B=0.1 mm (Figs 6, 7, 11, 13-16); C=0.05 mm (Figs 8-10, 17).

A zoogeographical interpretation of the very patchy distribution of Troctopsocidae would be premature in view of the scarcity of material of these very rarely collected psocids. Nevertheless it is interesting to note that the three known oriental species belong to two very closely related genera, one of them perhaps endemic to the Oriental Region (*Coleotroctellus*), the other also represented in the Neotropical Region (*Troctopsoculus*).

#### ACKNOWLEDGEMENTS

I wish to express my gratitude to the authorities who kindly facilitated our field work in Java and Sarawak, especially to Dr. Sampurno Kadarsan (Center for Research and Development in Biology, L.I.P.I., Bogor) and the staff of the Zoological Museum of Bogor, in particular Dr. Mohammad Amir, Dr. Yayuk Rahayuningsih Suhardjono and Prof. Dr. Ryozo Yoshii (Kyoto and Toyota Astra Foundation Jakarta), and to Dr. Abang Abdul Hamid (Forest Entomologist, Research Section of the Sarawak Forest Department, Kuching). I extend my thanks to Dr. P. Strinati (Cologne) and his guide, Mr. Goh Chin Teik (Kuching), who partially organized the Sarawak trip. I would also like to thank Prof. Dr. I. W. B. Thornton (La Trobe University, Bundoora, Australia) for reading the manuscript and correcting my English.

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